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Spatial Chaos as a Result of War Damage and Post-War Transformations. Example of the Small Town of Węgorzewo

Łukasz Musiaka [1], Paweł Sudra [2,*] and Tomasz Spórna [3]

[1] Faculty of Geographical Sciences, University of Lodz, Kopcińskiego 31, 90-142 Łódź, Poland; lukasz.musiaka@geo.uni.lodz.pl
[2] Institute of Urban and Regional Development, Targowa 45, 03-728 Warsaw, Poland
[3] Institute of Social and Economic Geography and Spatial Management, Faculty of Natural Sciences, University of Silesia in Katowice, Będzińska 60, 41-200 Sosnowiec, Poland; tomasz.sporna@us.edu.pl
* Correspondence: psudra@irmir.pl

Abstract: World War II's military activities and the post-war devastation period destroyed many European cities and towns. One of the areas that was struck the most was former East Prussia, currently located in Poland and the Kaliningrad Region (the Russian Federation). In addition to the destruction of cities, which are strategically and economically important, small towns have also suffered. An example of such a town is Węgorzewo, where the scale of destruction of the pre-war urban tissue exceeded 80%, and the old town's built-up area practically ceased to exist. This town magnifies most of the processes and spatial problems characteristic of Central and Eastern Europe's towns of the "metamorphic" type. Post-war zoning during the Polish People's Republic period, in the spirit of constructing a socialist town and bypassing the original spatial arrangement, brought about irreversible changes in the urban tissue. This was reflected in the break with the town's original layout and the creation of modernist buildings. The changes were solidified or even deepened during the economic and political transition of the 1990s in Poland. Today, decades after the end of World War II, despite taking corrective measures, the town is still facing the problem of spatial chaos. Its morphological and physiognomic manifestations in the lack of a central public space, the loss of its historic character, the disharmonization of the urban landscape, and the dispersed development are the main subjects of this article's analysis. This study uses a diverse methodological apparatus consisting of an analysis of the town's morphological transformations, an analysis of the physiognomy of the urban landscape and architecture, in situ studies, and an analysis of municipal documents and expert interviews. In the discussion, the study results are embedded in the context of the cases of other European cities and towns. The conclusions indicate the risks to the formation of spatial order in Węgorzewo and possible paths of action.

Keywords: spatial chaos; post-war rebuild; post-socialist city; small town; Poland

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1. Introduction

Despite various historical perturbations, global urban development can be considered a permanent process [1]. It contributes to an increase in cities' population and, above all, to their spatial expansion [2,3]. This development manifests itself in multidimensional changes in the spatial and functional structure of cities and their surroundings. Cities are becoming compositionally more diverse, more fragmented structurally, and more complex geometrically [4]. In view of the dynamic development of urbanization processes in the world, the development of cities located in Central and Eastern Europe (CEE) has become an interesting issue, particularly in the context of development that took place in two periods: the post-war and socialist period (1945–1989) and the post-socialist period (since 1990). Compared with most Western European countries, in the urban development of Central and Eastern European cities following 1990, the problem of spatial chaos is more apparent [5]. It is associated both with the scale of the post-war destruction of cities,

then their reconstruction, and the dynamic, sometimes uncontrolled, development in the post-socialist period.

The period of World War II (WWII) was of significance for the development of European cities. During this period, many European cities' spatial structure was severely disturbed or even demolished [6–8]. These cities faced the challenges of rebuilding or remodeling the urban tissue system under challenging economic conditions, often for decades. This problem mainly affected many CEE cities [9]. The process of post-war reconstruction was facilitated, on the one hand, by unrestrained, well-planned reconstruction of cities or their reurbanization. On the other hand, in many cases, it contributed to the occurrence of spatial chaos in their areas. This was due to the need for rapid urban reconstruction in a complex political situation and the socialist era's economic problems.

In many cases, the development of CEE cities after 1945 resulted in spatial chaos. Based on the example of many Polish cities, it can be concluded that spatial chaos has become an indispensable showcase of their space. The chaotic space formation process is characterized primarily by post-war spatial transformations of cities and towns of North-Eastern Poland (former Prussia) and Western Poland (the so-called Recovered Territories). Other post-socialist countries, such as Czechia, Slovakia, Hungary, and the Russian Kaliningrad Region, face a similar problem. In these areas, the statement of the well-deserved urban planners of post-war Poland, Hanna Adamczewska-Wejchert and Kazimierz Wejchert, that 'time passes, but urban problems remain' is still valid [10].

The dynamic spatial and functional changes that occurred after 1989 have also contributed to the intensification of spatial chaos in Polish cities [11]. The transition period initiated the occurrence of bipolar problems in the spatial development of cities and towns. The first one concerned their centers and was related to revitalization and redevelopment issues. The second one stems from the phenomenon of suburbanization (its uneven and often uncontrolled nature), occurring dynamically both in the outermost districts of cities and beyond their borders—in suburban areas and so-called periurbanization zones [5,12–15].

This article presents the genesis and progress of spatial chaos using the case study of the small town of Węgorzewo, located in North-Eastern Poland, both on the scale of the whole town and in its sections. The spatial chaos of Węgorzewo was caused by its destruction during WWII, its post-war reconstruction, and further transformations during the period of real socialism and the transition period until present times. About 80% of Węgorzewo was destroyed during the war [16]. It is an example of the struggle to deal with the problems of reconstruction and spatial evolution of a small urban center in CEE. A vital impulse in the process of 'repairing' spatial chaos in Polish cities and towns was the country's joining the European Union and the related implementation of Local Regeneration Programs. Such plans were also implemented in Węgorzewo for selected inner-city regeneration areas, but due to the scale of the town's spatial problems, they did not bring about the desired effects.

This article's primary purpose is to show the impact of the scale of WWII's devastation, the nature of the socialist reconstruction, and the transformation of the city's buildings after 1989 to the modern spatial structure of a small town, particularly in the context of the resulting spatial chaos. It has been assumed that urban spatial chaos, referring to various phenomena constituting the antithesis of spatial order, refers to the widely understood issue of the socio-spatial (dis-)organization of the city [17]. In this article, we examine the spatial chaos primarily in morphological terms on an urban scale, dealing with the aspect of the town's spatial organization. We also analyze it complementarily on an architectural scale, paying attention to its physiognomic and aesthetic aspects, and the issue of (dis-)harmonization of the urban tissue, especially buildings, within the immediate surroundings.

Concerning the established objectives, this article attempts to clarify the following issues (research questions):

- An analysis of the scale and nature of war destruction in Węgorzewo;

- The characteristics of reconstruction, construction development, and the development of built-up areas in the periods of 1945 to 1989 and 1990 to 2020;
- An assessment of the impact of post-1945 morphological transformation processes on the emergence of spatial chaos, the modern urban tissue, and the functioning of the town to a limited extent.

In this article, we attempt to approximate the scale of destruction of pre-war Węgorzewo, paying attention to its complex consequences and modern spatial problems. A great emphasis was placed on an attempt to explain the genesis of the observed spatial changes and the town's current state as regards the spatial chaos.

This article is divided into several sections. The theoretical section is an overview that introduces the issue of spatial chaos and the impact of the devastations of WWII and the post-war reconstruction on European (especially CEE) cities and towns. The research area's specificity is further presented in the second section, including the background of historical development and transformation of the town in the 20th century. The following section describes the methods and source data used. The section presenting the results of empirical studies contains the following:

- a description of the scale of destruction and post-war spatial development of the town;
- a morphological, urban, and physiognomic analysis of the central area of the town, made in order to determine the scale and distribution of spatial chaos;
- an analysis of the planning and strategic documents of Węgorzewo; and
- an analysis of expert interviews with town authorities and employees of budget entities and cultural institutions.

The Discussion section is a cross-reference of the theoretical take and the observed spatial chaos processes in Poland and other post-socialist countries, including attempts to reconstruct the former urban tissue and alleviate the phenomenon of spatial chaos. Conclusions, predictions of spatial changes, and directions for further research of the investigated issue are presented in the Summary section.

2. Theoretical and Historical Background

2.1. Spatial Chaos in the Context of Urban Development

Spatial chaos occurs on virtually all scales considered by urban geography—starting at the level of a single plot, quarter, or settlement [18], through a single city or agglomeration [19,20], to the regional, national, and international scales [21–23], and ending at the global scale [24]. Spatial chaos is viewed as the spatial manifestation of chaotic evolution [25]. In the case of cities, it is reflected in chaotic patterns of the urban landscape. Natural processes and human activities [26] are among the main groups of recognized landscape change factors. The concept of 'chaotization of space' [27] is understood as the process of deterioration of order both aesthetically and functionally. Spatial chaos is associated with both unaesthetic and dysfunctional geographical space [28]. The discussion of spatial chaos in the urban context shall be started by introducing some definitions of spatial order, to which chaos constitutes an antithesis.

In the Polish Spatial Planning and Development Act of 2003 [29], spatial order is defined as 'a formation of space that creates a harmonious whole and takes into account all functional, socio-economic, environmental, cultural and compositional and aesthetic conditions and requirements in an orderly relationship'. According to some researchers, spatial order is part of a broader concept of economic governance and economic order, which can be both constituted, i.e., 'upfront', exogenous to the economy, and spontaneous, i.e., 'bottom-up', endogenous [30]. In the literature, spatial order appears in contexts such as urban spatial order, e.g., street network orientation and configuration [31], and the quality of public space as determined by spatial order in architectural, aesthetic, social, environmental, and functional dimensions [32].

Urban order is a specific type of spatial order. It refers to the scale of land development, in which the composition of urban space plays a key role: the adopted convention, the layout and proportions of buildings, the spatial scale of the complexes, and the technical

condition and level of preservation of the existing urban tissue [33,34]. Public spaces constitute urban order determinants—their quality, resulting from their degree of attractiveness and accessibility [35]. Elements of spatial order at the urban level also include the efficiency and reliability of the technical infrastructure and the order in transport infrastructure, conditions ensuring personal and social security—taking into account the availability of social services facilities—or environmental order, including the availability of green areas [36].

The term 'spatial chaos' very often appears in the function of an expert term, while at the same time it can be seen that it is ambiguous and does not have a stable definition [17]. It is used to refer to phenomena of considerable variety, such as urban sprawl, collapse of infrastructural systems, inefficiency of urban administration, or social injustice related to the process of reprivatization. At the same time, the word "chaos" smuggles in normative statements about values, revolving around the question of what order is (or should be), of which chaos is the opposite. Let the statement already quoted in the introduction that all the above meanings of this term refer to the broad issue of socio-spatial (dis-)organization of the city [17] serve as the operational definition of chaos that we adopt in this article, with the proviso that we do not in principle deal with social aspects, but morphological and physiognomic issues, which have a significant impact on the functioning of the town and the way it is perceived by the residents and visitors.

Urban chaos is often equated with suburbanization and urban sprawl [37,38]. Due to the rapid development of urban areas, the chaoticness of the urban composition is one of the main problems for suburban areas and periurbanized zones, but also for inner-city areas (city centers), residential districts of cities, and brownfields. The existence of chaos in spatial development is evidenced by various spatial conflicts arising from land use. Due to the multidimensionality of spatial chaos, its sources result from social or ecological conflicts and chaos related to the disturbance of the architectural and landscape values of a given place. The proper organization of spatial order reflects a specific type of social order. In contrast, a lack of order is often identified with: (1) a mess; (2) unplanned spatial development; and (3) poor-quality architecture [39]. It is worth mentioning that in the apparent chaos of modern and historical urban forms, a hidden regularity of forms similar to fractal geometry can be found [40,41].

In the context of spatial changes, this article discusses in a multidimensional way the specific type of urban spatial chaos taking place in a small town. It was created primarily due to war damage, reconstruction of the town, and the town's development under changing political and economic conditions. The practical manifestations of spatial disorder in Węgorzewo can be assigned to one of two intersecting dimensions: (a) in aesthetic terms (disharmonization of the urban landscape); and (b) in practical terms (confusion and underdevelopment of functions) (cf. [39,42,43]). We focused on analyzing the phenomenon of urban chaos in terms of the disharmonization of the urban landscape. The functional analysis of chaos was kept to a minimum and constituted only a background and complement to the research. We primarily paid attention to the central area of Węgorzewo, which had the character of compact, historical development before the war, and now is the most affected by spatial chaos. The issues of suburban development and urban sprawl and, thus, the chaoticization of suburban space do not constitute the central research point and are discussed selectively.

2.2. War Destruction and Its Impact on Changes in the Spatial Structure of Cities

2.2.1. Destruction of Cities as a Result of World War II, with Particular Regard to Poland

The extent of the destruction of European cities during the WWII period is widely described in the literature [6,9,44–47]. A particular example of large-scale war destruction is the area located in the present territory of Poland. As a result of WWII, the country suffered enormous civil and material losses, from both the German and Soviet occupiers. In many cities, the massive scale of destruction was caused by bombings carried out both from the ground and the air. The most affected regions of contemporary Poland include Warmia and Masuria, which, before the war, were within East Prussia's borders.

The final fall of the Third Reich began when the Red Army entered East Prussia in January 1945. It can be said that the Russians severely charged Germany for the crimes committed on the Eastern Front. The area of East Prussia was treated as war prey. Cities and towns were systematically looted and property exported to the Soviet Union (USSR) [48]. East Prussia, following the decisions taken at the conferences in Yalta, Potsdam, and Tehran by the United States, the USSR, and the United Kingdom, was divided between Poland (Masuria, Warmia, and Powiśle) and Russia (the Kaliningrad Region and the Klaipeda region given to Soviet Lithuania). The Germans, who failed to escape to the West in 1944 and early 1945, were deported to Germany until 1948 [49].

The extent of the destruction in East Prussia caused the loss of the municipal rights of 20 towns from the area of former Prussia included in Poland (e.g., Kisielice, Miłakowo, Miłomłyn, Młynary, and Zalewo) [50]. Estimates for the whole of East Prussia revealed the loss of about 16,000 historic townhouses, which is more than 30% of all residential buildings, for which the average damage was calculated at 53%. The example of East Prussia shows that Soviet troops occupied cities and towns in rapid raids. As a consequence of capturing towns 'without a single shot' or in limited combat operations, the destruction was minimal. The cause of the great destruction of Prussian cities and towns was documented by T. Domagała, who demonstrated their looting and subsequent burning by the Red Army in the period between the capture and the transfer to Polish operational groups [48]. Many material losses that perpetuated and aggravated the devastation of many cities and towns were also due to difficulties with material and human resources, central planning and ideological decisions, and mere negligence in the early post-war years.

2.2.2. Reconstruction and Spatial Transformation of Cities after World War II with a Particular Focus on Poland

The first problem faced by cities in Poland in 1945 was the security and proper use of the remaining property and reconstruction following war destruction [51]. This problem particularly affected cities and towns where the scale of destruction amounted to more than 70% of the development. These were both the largest cities in the country (Gdańsk, Szczecin, and Warsaw) and small towns in the center of the country and the so-called Recovered Territories connected to Poland after the war [52,53].

When considering the reconstruction of Polish cities and towns after the destruction of WWII, several directions and trends of activities carried out after 1945 can be identified. Due to the scale of destruction, this process could take on the character of a partial (e.g., Wrocław) or total (Warsaw) reconstruction of the development in the historical spirit (Gothic style reconstruction). In Warsaw's case, its old medieval town part was meticulously rebuilt after 1945 in the spirit of faithful restoration of Gothic tissue and with the elimination of elements of later eras (Gothic style reconstruction). As a result, the old town was added to the UNESCO World Heritage List [54]. Another form of reconstruction was the restoration or creation of parts of buildings in the historical spirit, e.g., facades, and combining them with the construction of new architectural tissue (from the courtyard side). This method was applied in Gdańsk.

On the other hand, modernist architecture elements typical of the socialist cities of Central and Eastern European countries were introduced to destroyed cities on a massive scale [55,56]. In the People's Republic of Poland, socialist modernism ideas were implemented in the late 1950s and soon became the leading concept of socialist reconstruction. This program envisaged 'abandoning the recreation of former architectural and urban forms and pointed to the need to harmonize new architecture with the old and to refer to the old urban forms' [57]. Such actions in destroyed cities usually ended in blatant architectural and urban dissonance and even the complete elimination of historical development in some areas. Resolution no. 666 of the Government Bureau of 20.08.1955 [58] 'on the planned action to remove the remnants of war destruction in cities and settlements' was implemented due to the slow process of removing traces of destruction, and it significantly contributed to the obliteration of the original urban layouts and landscape. The

main rubble-clearing activities ended around 1960 on the fifteenth anniversary of Poland's regaining the Western and Northern Lands [50].

In the initial period, after the main clearing of the urban space, the surviving buildings in satisfactory technical condition were used and adapted. To a limited extent, selected elements of the urban tissue were rebuilt/reconstructed. Subsequently (starting in the 1960s), with the increase in the population and economic development, new buildings began to be constructed, multi-family apartment blocks, public facilities, and areas with industrial functions were enlarged, and urban infrastructure was expanded. In the most devastated areas, spatial changes often took place with no respect for the pre-war ownership divisions and even the course of the street network. Tragically, in some cities, the post-war action of rubble-clearing and brick sourcing did more harm than direct hostilities. In many cases, the disappearance of the historic tissue was also due to the lack of funds for renovation and destruction caused by time's natural passage. As a result, the pre-war urban landscape of many cities and towns of the Reclaimed Lands was irretrievably lost. In many cities' central areas, we are now experiencing a mosaic of various forms and functions of pre-war and post-war development, resulting in significant architectural and urban dissonances. The impression of spatial chaos is particularly noticeable in the most destroyed cities and those that have not yet seen a comprehensive reconstruction of their centers. Węgorzewo is one of them.

The following stage of changes in Polish cities and the spatial structures of cities in other CEE countries, especially in their central parts, was initiated with the political and socio-economic transformation in the 1990s [59]. After 1989, in new economic and socio-political circumstances, further urban development of cities within their administrative boundaries is noticeable. It is mainly manifested through the development of new single-family housing ('classical' and 'inner' suburbanization), an increase in the share of transportation and industrial and commercial areas, the development of infrastructure, and the processes of regeneration and revitalization of historic buildings. Revitalization processes increasingly include blocks of flats, settlements, and post-military, post-railway, and post-industrial areas. The negative spatial phenomena observed in Polish cities and towns of this period include the urban landscape being littered with multi-colored advertisements, often in a large format, a decrease in the level of spatial planning aimed at the maximal use of free space and dense development, the dictatorship of developers imposing the form and price of constructed buildings and premises, urban infills with ill-fitting buildings in terms of spatial context, the dictatorship of ground rent, the construction of smaller commercial and consumer facilities with poor aesthetics, and the location of large shopping centers in city centers, often in areas of historical urban tissue and others [35,60–64].

The lack of spatial order in Poland and the specific shape of this chaos also has its broader historical and cultural determinants as well as those related to conditions of space management [5,65]. The contemporarily noticeable chaos is largely a result of flawed space-shaping laws and, moreover, inefficient law enforcement. This allows for the possibility of avoiding the creation of local zoning plans in favor of individual administrative decisions on development conditions and leads to an imbalance between the private and the public interest in the management of the space and the failure of architects and investors to comply with the restrictions on urban planning. This inefficiently connects different levels of space management and spatial planning to strategic economic planning. As a result, there is a crisis in spatial planning and a disruption of its regulatory role. This applies not only to rural areas and suburban areas but is also apparent in cities and towns [5].

3. Research Design and Methodology

3.1. Study Area

Węgorzewo (formerly Angerburg), formerly located in East Prussia and now in North-East Poland (Figure 1A–C), was selected to analyze the spatial chaos of a small town in this article. Due to the town's small spatial and population scale, the processes of changes taking place here are very distinct. According to the authors, the history of Węgorzewo

brings together the post-war and contemporary problems of the Warmia–Masuria region. It perfectly reflects cities' spatial and functional transformations in the so-called Recovered Territories over the last 75 years. Before WWII, Węgorzewo was located in the central part of East Prussia, in the hinterroom of Königsberg (now Kaliningrad, Russia)—a seaport and at the same time the provincial capital. At that time, Węgorzewo served the important function of a railway and water transportation hub. Tourism and small industry developed. The high commercial rank of Węgorzewo was evidenced by two markets operating before the war. For strategic reasons, a strong military unit was stationed here, which provided the town with additional income.

As a result of the winter offensive at the end of WWII and the Soviet post-war command's destructive operations, 80% of the town's buildings and infrastructure were destroyed [16,66]. It is presently evident in the urban tissue, with its apparent lack of historical development in the center. After WWII, Węgorzewo changed its administrative location from a centrally located center to a peripheral location favorable to Poland as well as the Warmia and Masuria region. In addition, due to its proximity to the closed state border with the newly created Kaliningrad Oblast, it lost its historical function of a transportation hub (Figure 1C).

The town's historic character and its original identity (Figure 2) were almost completely annihilated. The dramatic situation was exacerbated by the demographic collapse and the total population exchange (from German to Polish and, to a lesser extent, Ukrainian). On the eve of WWII, the town's population was 9.8 thousand, while just after it ended, there were only 450 inhabitants. Currently, the town has a population of 11,280 (2019). The town only reached its pre-war population number again in the 1990s. Węgorzewo changed from a successfully developing town to a town facing a spatial, economic, and demographic crisis. The 1950s and 1960s posed a difficult challenge when the town was cleared of rubble and rebuilt with great exertion and many resources [66]. The few buildings that survived the war were, to a great extent, secured and used. However, the overwhelming majority of the urban tissue was not restored but replaced with modernist buildings and modern infills. The city's post-war development did not compensate for the vast chaos on the architectural and urban scales, making it impossible to locate the spatial and functional center of Węgorzewo at present. We attempted to identify the area of the town center. We defined it as a coaxial zone with a radius of 500 m starting at the center of Grunwald Square, the former old town square (*Alt Markt* and *Holz Markt*). This area covers most of the pre-war compact development zone of Węgorzewo, including Freedom Square (formerly *Neuer Markt*), the parish church, and the Teutonic castle with its surroundings.

The post-socialist transition period contributed to changes in the spatial and functional structure of the town. It caused the collapse of many workplaces and the unemployment crisis. To this day, only tourism and the military garrison, which has a very pronounced impact on the local labor market, have survived from the town's former economic foundations. According to a report by the Warmia and Masuria Office of Spatial Planning [67], in the total classification of nineteen district centers of the Warmia—Masuria region in the demographic, economic, and social spheres, Węgorzewo was placed in the fifth, that means the lowest, category of towns. Towns in this group are socially, economically, and demographically disadvantaged and require developmental support.

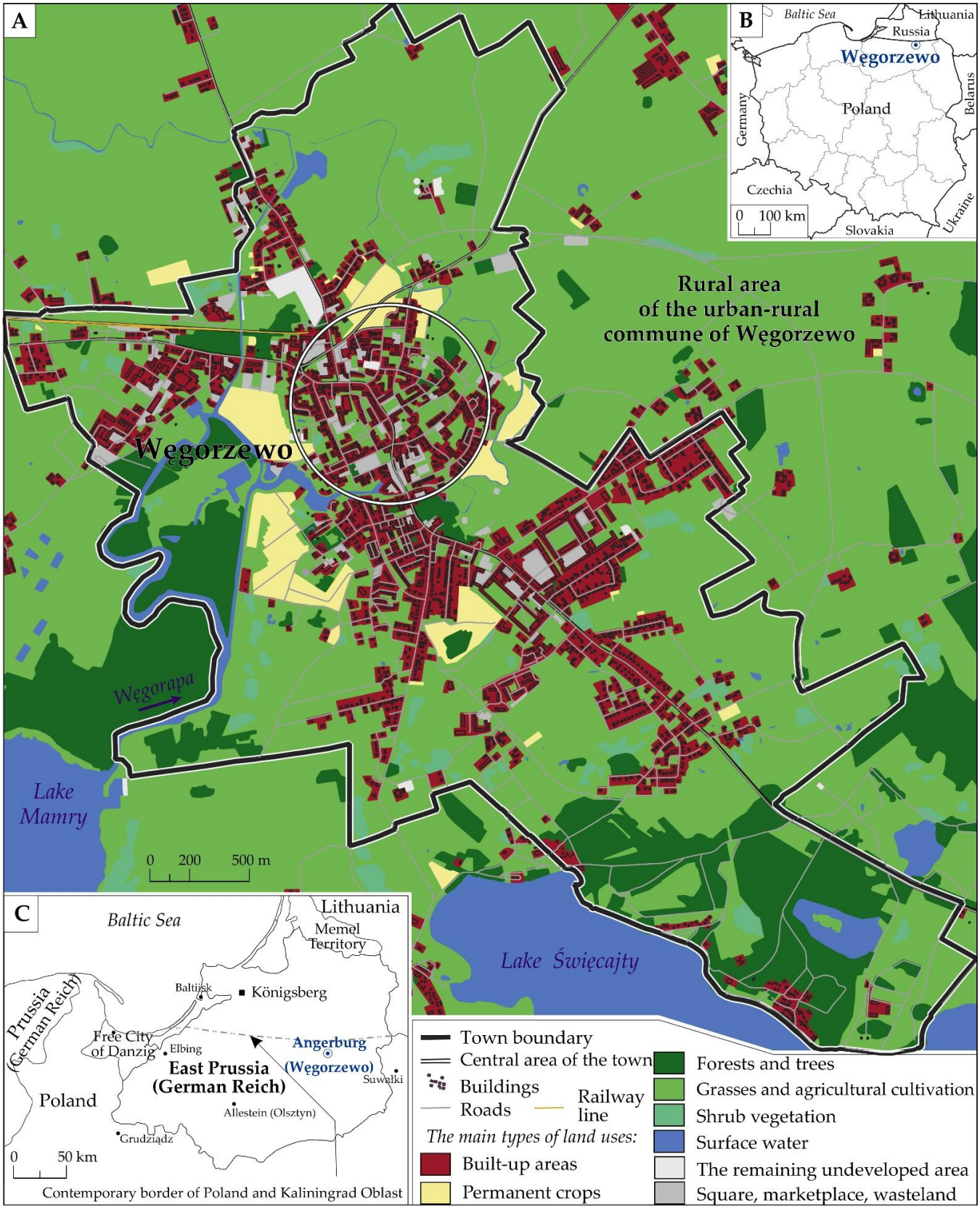
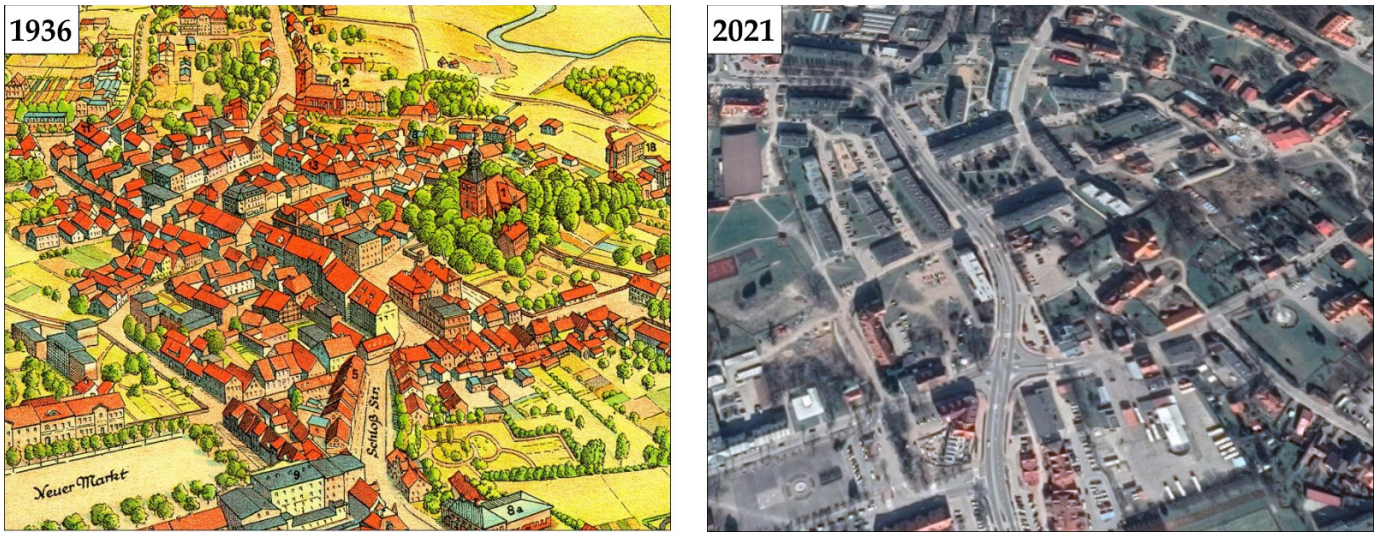


Figure 1. (**A**) Land use in Węgorzewo in 2020; (**B**) the location of Węgorzewo within present administrative and political borders; and (**C**) the location of Węgorzewo within historical and political borders (1939). Source: (**A**–**C**) own study; (**A**) using the Topographic Objects Database BDOT [68].



(**A**) (**B**)

Figure 2. Panoramic view of the central part of Węgorzewo: (**A**) before World War II; (**B**) today. Source: (**A**) Kreis und Stadt Angerburg [69] and (**B**) Google Maps [70].

In physical and geographical terms, the municipal area belongs to two units: the southern part is included in the Land of Great Masurian Lakes, whereas the northern part is included in the natural depression of the Land of Węgorapa. The region is characterized by high values of the natural environment—a postglacial landscape with a varied topography and numerous lakes and forests. The degree of environmental contamination is low. Due to its topography and the hydrographic network, the town is heavily fragmented, and in the south is based on Lake Święcajty. Węgorzewo bases its tourist potential primarily on its location within the Great Masurian Lakes' sailing route and its natural values. The municipality of Węgorzewo is currently not a priority area for regional spatial policy due to its peripheral location. On the other hand, the possibilities for further developing its tourism potential are clear, and the active tourism sector, mainly sailing, canoeing, and cycling, can be further developed. Attempts have also been made to activate the cultural tourism sector based on the town's resources.

The described determinants, conditions, problems, and challenges of development allow us to define Węgorzewo as one of the most interesting examples of spatial, functional, and social transformations of small post-socialist towns in Poland in the post-WWII period. These transformations have impacted the occurrence of spatial chaos within the town (particularly in its center) and have contributed to the development of multifaceted problems.

3.2. Materials and Methods

3.2.1. Materials

A rich and diverse database of source materials was used to achieve our research objectives. In the first place, spatial data were used. Their number, sources, and spatial and time range varied greatly. The research mainly used digitized topographic maps on various scales, city plans (sketches), aerial photographs, orthophotomaps, and the current Topographic Objects Database (BDOT) on a scale of 1:10,000 [68]. The time range of all spatial data and documents is 1940–2020 (see Table 1). Iconographic materials were also used for physiognomic analyses, both archival, in the form of postcards, aerial photographs, and other photographs, and contemporary. Extensive photographic documentation of the town from 2019 and 2020 was collected during field studies, and earlier collections of the authors were used as well.

Table 1. Characteristics of data types and sources used in the analysis.

Data Types	Name and Source	Time Reference	Area	Scale or Resolution
Raster	Plan miasta Węgorzewa (Town plan) [71]	1940s	Central part of the town	1:2500
Raster	Plan miasta Węgorzewa (Town plan) [72]	1940s	Central part of the town	1:2500
Raster	Plan miasta Węgorzewa (Town plan) [73]	1957	Central part of the town	none
Raster	Urbs Angerburgica/das ist/Angerburg [69]	1936	Węgorzewo and neighboring area	none
Raster	Szkic przeglądowy (Overview sketch) [74]	1956–1959	Węgorzewo	none
Raster	Miasto Węgorzewo, Szkic do protokołu granicznego (Sketch for the border protocol) [75]	1960	Central part of the town (IV districts)	1:1000
Raster	Mapa sytuacyjna m. Węgorzewo [76]	1966	Former downtown area	1:1000
Raster	Mapa topograficzna: 214.134, 214.134 (Topographic map) [77]	1989	Norther and southern part of the town	1:10,000
Raster	Mapa topograficzna Węgorzewo Płn., Węgorzewo Płd., Kalskie Nowiny, Kolonia Rybacka (Topographic map) [78]	2017	N, S-W, E, S-E parts of the town and neighboring area	1:10,000
Raster	Orthophotomaps: N-34-68-A-d-2-3, N-34-68-A-d-2-4, N-34-68-B-c-1-3, N-34-68-A-d-4-2, N-34-68-B-c-3-1 [79]	2019	Węgorzewo	Pixel above 10 cm
Vector	Baza Danych Obiektów Topograficznych (BDOT10k) (Topographic Objects Database) [68]	2019	Węgorzewo	1:10,000

The article also uses monographic publications and press reports on historical and contemporary conditions of the town's development. They were complemented by strategic, planning, and urban regeneration documents of the Węgorzewo Town Council (Węgorzewo Municipality Local Development Plan of 2004 [80], A Study on Conditions and Directions of Spatial Development of the Węgorzewo Municipality of 2016 [81], A Local Regeneration Programme of Węgorzewo in the period 2017–2020 [82], and Analysis of Changes in Spatial Development and Evaluation of the Validity of the Study and Local Plans of the Town and Municipality of Węgorzewo [83]). The analysis of the abovementioned documents was supported by the results of expert interviews conducted in September 2020 with representatives of municipal authorities and public sector employees in Węgorzewo [84]. These focused on the town's development at the beginning of the 21st century, the urban policy on investments, spatial planning, and forward-looking development (including the actions aimed at preventing spatial chaos).

These data were complemented by demographic, social, and economic data obtained from the Local Data Bank operated by Statistics Poland [85], as well as the data provided in the Database of Own Documents regarding local law in the Węgorzewo commune [86].

3.2.2. Methods

Several groups of research methods were used to achieve the outlined objectives of the study. The first group consisted of methods used to determine the morphological changes in the town. They were based on spatial data, in particular on the coverage of built-up areas and the arrangement of buildings. All archival spatial data sources were georeferenced according to commonly used procedures for the analysis of city plans and topographic maps using historical GIS methods [87–89].

To determine the spatial and functional changes in Węgorzewo between 1940 and 2019, a retrogressive approach was used, which is used in geographical and historical research; it consists of the analysis of archival cartography materials in order from the latest to the oldest [90,91]. To achieve that, the BDOT database, which represents the current state of spatial development in Węgorzewo, was contrasted with archival topographic maps and city plans. The procedure resulted in the designation of a built-up area of the town in periods for the years 1944, 1956, 1989, and 2019, followed by an interpretation of the changes. The current zoning status acquired from BDOT [68] was revised and updated based on field studies (an urban inventory) and an analysis of the latest orthophotomaps from 2020. The cartographic material thus prepared was subject to further spatial and statistical analysis in ArcGIS Pro 2.7.1. The program was used to study the development and transformation of urban investment areas in Węgorzewo.

An analysis of the city plan's transformation was carried out for the four periods mentioned based on the graph method, which was applied to the spatial development of the whole town. Such analyses have been used in geographical research and regional and urban studies since the 1960s [92,93]. The article provides a comparative analysis of the structure of graphs in specific periods. In the graph analysis, the city's or the town's layout can be regarded as a physical arrangement of development elements and connecting roads [94]. A graph is a geometric figure composed of nodes and connecting edges [95]. The graph's shape presents the layout of development located along particular roads of the analyzed settlement unit. Graphs consist of individual buildings as vertices and sections of roads surrounded by compact development. The edges of the graph form connections between nodes, i.e., sections of roads with buildings. Graph cycles are areas enclosed by several edges, along which there is development. Depending on the number of edges coming out of nodes, their rank changes (the more nodes, the higher the rank) [96,97]. The primary indicator when testing the structure of the graph is the degree of its development [96], taking the form of:

$$G_D = \sqrt{\frac{\sum_{i=1}^{n} r_i^2}{2e}} \times \frac{e + 2c}{n} \quad (1)$$

where G_D is the graph development index, e is the number of edges, n is the number of nodes, and c is the number of cycles.

The index expressing the average rank of nodes is:

$$\sqrt{\frac{\sum_{i=1}^{n} r_i^2}{2e}} \quad (2)$$

where r_i is the rank of the node.

The degree of graph development is reflected by important intermediate indicators, such as the number of cycles in the graph, the number of nodes of a different rank, and the number of graph edges. The graph method allowed for the study of the spatial development of the town, the extent of war destruction (the appearance of gaps in the development), and the degree of modern dismemberment of the spatial layout of the town.

The description of spatial chaos (in urban terms) in relation to the changes taking place in the central area of the town was possible thanks to other selected measures, including development density and concentration indicators. The basic method was the analysis of the built-up area for the central ring, which was broken down by hexagons in a grid of 100 m × 100 m. The indicator of the percentage of cover of the ground area by the development (buildings) was used. Building data obtained from cartographic materials were not subject to further generalization (spatial aggregation). This analysis was used to identify the places of infills and the destruction of buildings and their scope in different time intervals.

For the same area, calculations were made for the analysis of the development concentration using the nearest neighbor method [98]. The method uses an index based on measuring the average distance between each element of the set and the nearest adjacent element. According to the Gaussian distribution, the index allows for the determination of the deviation of the spatial distribution of objects from the theoretical random dispersion of points in an area. In this case, the dispersion of buildings in the study area was analyzed, taking into account the centroids of buildings. The Clark index (or Clark–Evans index) is expressed as the quotient:

$$ANN = \frac{\overline{D}_O}{\overline{D}_E} \quad (3)$$

where $\overline{D}_O$ is the observed average distance between the two closest neighbors; and

$\overline{D}_E$ is the expected average distance between the two closest neighbors.

$$\overline{D}_O = \frac{\sum_{i=1}^{n} d_i}{n} \tag{4}$$

$$\overline{D}_E = \frac{0.5}{\sqrt{\frac{n}{A}}} \tag{5}$$

where d_i is the distance between the object i and the nearest object, n is the total number of objects, and A is the total area.

A completely random spatial layout occurs when $ANN = 1$. A value of $ANN < 1$ indicates a cluster layout, and a value of $ANN > 1$ indicates a trend toward dispersion. A maximum concentration (at one point) occurs at $ANN = 0$, and a maximum dispersion when points are distributed regularly with $ANN = 2.1491$. The calculation of additional parameters—the standard deviation ('z') and critical significance level ('p')—makes it possible to determine the statistical significance of the obtained results in relation to a normal distribution. A zero hypothesis is assumed, with any observed decomposition being coincidental. The actual location of objects may indicate the action of attracting or repelling forces [99,100]. The analysis was supplemented with centrographic measures through calculation and visualization on a map of a centroid determining the position of the center of gravity of buildings—the average coordinates determined by the points representing buildings. This analysis element was intended to indicate whether the focal point of the development was significantly shifted as a result of the spatial reorganization of the town center.

In addition to the widely discussed methods of spatial analysis of morphological changes in the urban tissue, the second group of methods used included methods of physiognomic and architectural studies. This part of the research was carried out from both a historical and a contemporary perspective. The historical analysis consisted of evaluating archival source materials in iconographic form (photos, postcards) and juxtaposing them with the effects of the town's field study (field and urban landscape studies) carried out in 2019 and 2020. This allowed for specific examples of architectural and urban chaos in the town to be located.

Another method used was the analysis of the town's planning and strategic documents in terms of the diagnosis, the repair, and counteracting the effects of spatial chaos. Systematic analysis of documents, along with their interpretation, is an important element of qualitative research. Together with the use of sources such as interviews, participant and non-participant observations, and the study of physical artifacts, it can be a means of triangulation—a combination of different methodologies in the study of the same phenomenon—and it can be successfully combined with quantitative data analysis methods [101,102]. Therefore, the analysis of documents was combined with social qualitative research in the form of expert interviews conducted in September 2020 with representatives of municipal authorities (the mayor and deputy mayor) and employees of the public sector and cultural institutions. The interviews were performed in accordance with the practical guidelines for conducting sociological research [103]. They constitute a supplementary and verifying source of data in relation to the analysis of official documents. Such a role, in addition to the basic study of the context of phenomena, was also played by the literature query on the historical and contemporary conditions of the town's development.

The analysis of spatial chaos in the town took into account the following research periods: (1) the socialist period of the town (1945–1989), characterized by a varying scale, direction, and character of rebuilding and the development of new elements of the urban tissue: (a) 1945—post-war destruction; (b) 1945–1960s—post-war reconstruction and the use of existing housing and infrastructure; (c) 1970s–1989—the introduction of modernist architectural infills in the town, the construction of blocks of flats, the incorporation of new areas into the town, new transport investments, and further industrialization; and (2) the post-socialist period of the town (after 1989), characterized by urban regeneration,

intensification of suburbanization, deindustrialization, the construction of substandard buildings in the center, development of the tourist function, and infrastructure and transport investments.

4. Results

4.1. Scale of Destruction and Post-War Reconstruction of the Town

In 1945, Węgorzewo was one of the most war-damaged Masurian towns. The population was only 1184 in 1946. At the time of Węgorzewo's acquisition by the Polish government, the town was literally in ruins. Only about 15% of the pre-war buildings were usable. Many of those still standing were burned inside and in danger of collapse (Figure 3). The town did not have such essential utilities as electricity, a water supply, or gas.

Even though the town's population is 11,280 people (2019), a similar value to the pre-war period, it covers a larger area. Before the war, the urban sprawl occurred to a lesser extent. Węgorzewo had a much more densely built-upcenter before the destruction occurred. Squares such as the *Altmarkt*, *Holzmarkt*, and *Neuer Markt* and streets were fully developed. During the first fifteen years after the war, clearing and securing work mainly took place. Construction on a broader scale was not undertaken until the early 1960s. In 1960, the first two new apartment blocks were built. In the following years, the construction of single-family houses and renovations of dozens of buildings that survived the war began. An area of more than 7.5 hectares was cleared of rubble, greenery and flower beds were arranged there, and many trees and shrubs were planted. The Węgorapa river was embanked with concrete fortifications [66,104]. New multi-family buildings from the 1960s and 1970s and single-family houses were located in the places or the vicinity of pre-war buildings. In some areas, new buildings were constructed using old plans, but most were built without attention to the old layout of streets, plots, and buildings.

Figure 3. View of the town center, 1945. Source: Photo Archive—East Prussia [105].

In the town center, a new development was built at a greater distance from the streets than before the war (e.g., Zamkowa Street) or was not rebuilt (Grunwald Square). The former intra-market block (*Altmarkt* and *Holzmarkt*) was destroyed, and today there is a green area in its place. Multi-family apartment complexes replaced the former market frontings. The development along the Grunwaldzka and Teatralna Streets (the historical center of the town) was created in a modernist style, contrasting in scale and appearance with the earlier, scarcely preserved buildings. The frontals' continuity was lost, and the spatial cohesion of the central area was broken down. As a result of the reconstruction following the war destruction, the layout of buildings in the central part of the town was loosened. Some formerly built-up areas were allocated to green areas in an attempt to visually 'replenish' the urban tissue loss, which also had a positive effect by increasing access to recreational and biologically active areas.

4.2. Post-War Spatial Development of the Town—Analysis of Morphological Changes

Cartographic materials from four different periods were used to analyze morphological changes and make graphs (the end of WWII (1944)—before the town was destroyed, 1956—after the clearing of most of the destruction and before the construction of the first post-war building, 1989—the end of the period of real socialism, and 2019—presenting the current state). Figure 4 presents graphs drawn from these plans. When drawing the graph from 1956 for the area of the former German barracks, the city plan from 1989 was used because, during the post-war period, the areas used for military purposes were presented as white spots for military and political reasons on most plans and maps created in the Polish People's Republic.

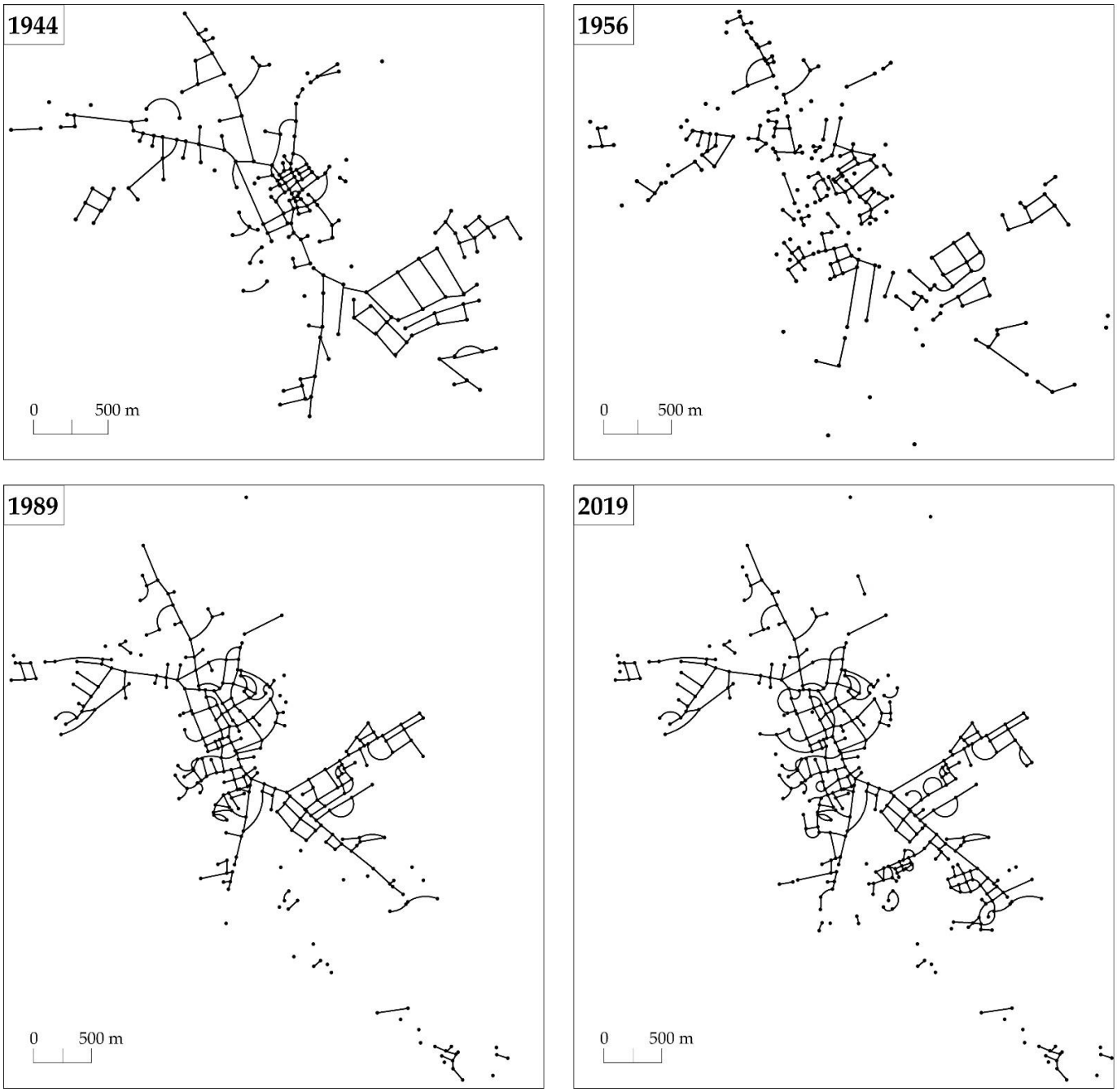


Figure 4. Graphs showing the morphological changes in Węgorzewo during the examined period. Source: own studies based on archival and present plans for Węgorzewo [71,73,77,79].

The scale of the transformation of graphs is complemented by Table 2. The town's spatial changes are most clearly seen when analyzing the graph expansion index (in the last column of the table), which collapsed in 1956, indicating significant damage to buildings (a decrease from 2.233 to 1.347). In 1989, which ended the Polish People's Republic period, the index exceeded the pre-war value, reaching the level of 2.56. Over the last 30 years, its value has increased to 2.71 with the development of buildings (especially in the southern part of the town). Moving on to a more detailed analysis of the graphs and the values collected in the table, it should be concluded that the number of nodes, edges, and cycles changed significantly over the studied period. Between 1944 and 1956, the number of edges corresponding to compact development along the streets decreased markedly. It was similar to the number of cycles, which declined by more than two-fold. Only the number of nodes, mainly the so-called zero nodes from which no edges come out (Figure 4), increased. This indicates a significant increase in the number of individual buildings not adjacent to any development. The comparison of graphs of 1944 and 1956 shows the massive scale of destruction and the loss of spatial continuity of urban development. These changes resulted in the chaotic location and randomness of urban development.

Table 2. Changes in the degree of development of graphs of Węgorzewo during the studied periods.

Year	Nodes	Edges	Cycles	G_{DI}
1944	211	439	34	2.233
1956	233	351	16	1.347
1989	300	649	66	2.560
2019	371	835	89	2.710

Source: own studies based on archival and present plans for Węgorzewo.

Spatial changes during the post-war reconstruction period (a comparison of the number of cycles, nodes, and edges on the graphs of 1956 to 1989) indicate the density of tissue in the central area due to the restoration of connections between nodes and edges from the pre-war period and expanding new links. During this period, the most significant increase in the analyzed values over the whole studied period took place. Over the last thirty years (1989–2019), the number of nodes, edges, and graph cycles also increased. However, this increase was not as spectacular as during the Polish People's Republic period, as the development of the central part of the town at the beginning of the transition period had already occurred. Only a significant increase in the number of nodes (from 300 to 371) is noticeable, which may be associated with new development construction, both compact and scattered (mainly in the southern part of the town, Figure 4). Summing up the graph analysis, it can be concluded that, despite the increase in the graph's development rate between 1944 and 2019, its small value, not exceeding 3, indicates a considerable fragmentation of the town's development, both before the war and at present.

The interpretation of the changes in the development cover in the central area of Węgorzewo (Figure 5) allows one to conclude that the current coverage of about 13% (2019) is slightly greater than that of the pre-war coverage (or, more precisely, occurring in 1944—before the wave of destruction at the end of the war), when it amounted to about 11%. In the first few years following World War II, this percentage decreased two-fold to 5.4%, in 1956, with the buildings surviving the war varying in their state. Buildings that were utterly ruined were not marked on the figure. What is characteristic is that the structure of development in the very center—the vicinity of Grunwald Square (the Old Market Square) as well as Freedom Square (the New Market Square)—was the most compact before the war, exceeding 30–40% of the area covered by the buildings versus 20% at present. This indicates a significant loosening of the urban tissue, which previously consisted of tenement houses with clear frontage. Today, it is dominated by multi-family modernist buildings in various setups, with arranged and non-arranged green areas, urban wastelands infilled by various service facilities, and single-family residential houses. It should be noted that the buildings constructed during the period of the Polish People's Republic were not high-rise and did not exceed several floors, generally corresponding

with the spatial scale of a small town. An analysis of the cartographic material shows that, despite the lack of development of residential buildings between 1944 and 1956, new facilities with economic functions emerged.

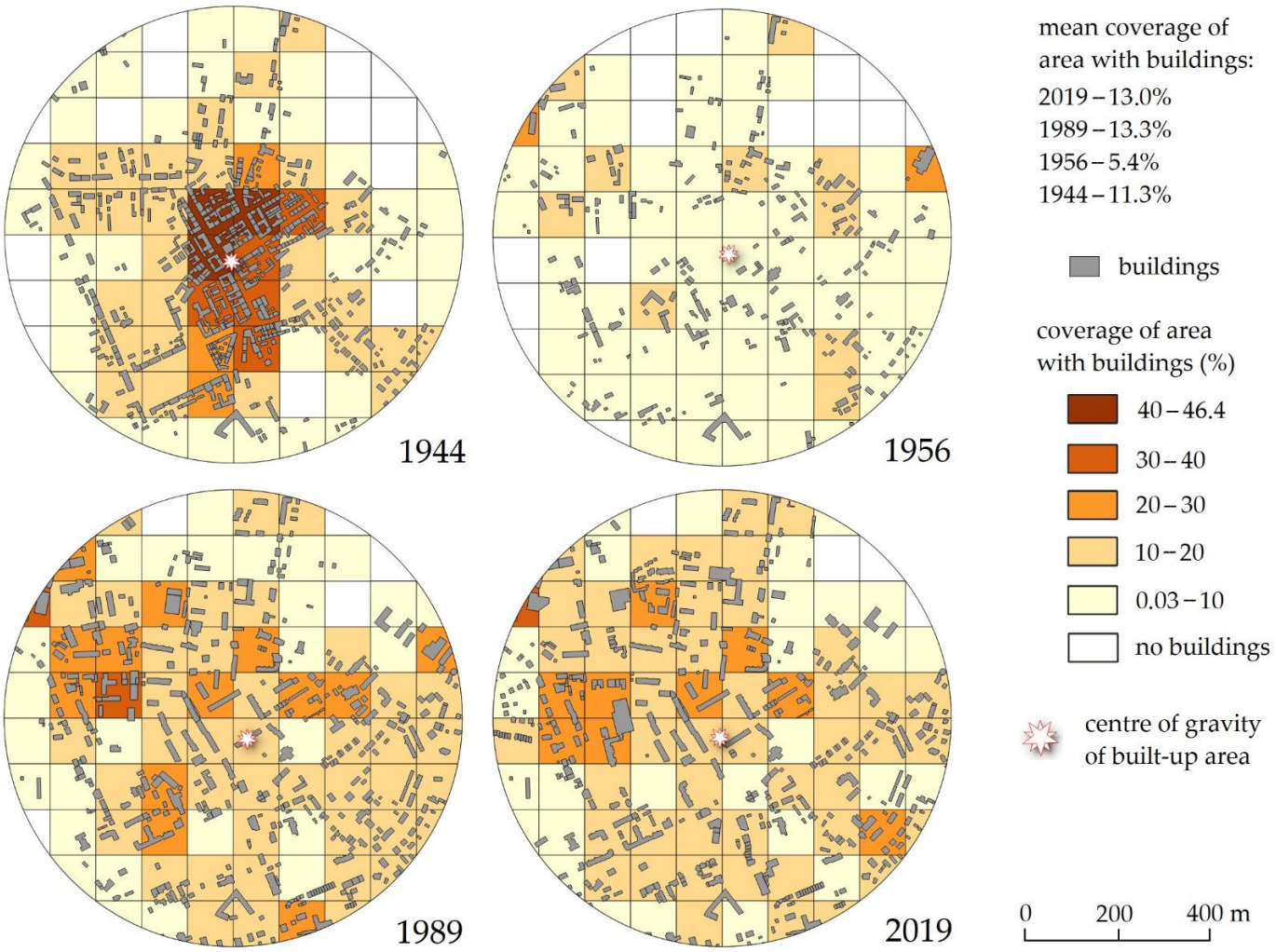


Figure 5. Changes in the development cover of the central area of Węgorzewo during the period 1944–2019. Source: own studies based on archival and present plans for Węgorzewo [71,73,77,79].

An analysis of the relocation of the centroid (center of gravity) of the built-up area in the central part of the town does not reveal significant changes. Despite the visible changes in the development cover (the percentage of built-up area and the location and dispersion of development), its focal point hovered around the contemporary Grunwald Square, the old market square of Węgorzewo.

An analysis of the statistics of the nearest neighbor (Table 3) indicates several regularities. Despite the smaller development cover before the war compared with today, there were many more buildings in the town. This means that the scale of the development was smaller, but the urban tissue was more compact. Secondly, the number of buildings between 1989 and 2019 has remained virtually unchanged. This means that contemporary building infills were balanced by the demolition of buildings, mainly utility buildings, in the town's central area. The average distances between buildings were the smallest before the war (16 m) and the largest, unsurprisingly, just after the war (23 m). The cause is the destruction during the war and the subsequent destruction of the town by the Red Army, which resulted in a clear loosening of the development.

Table 3. Statistics of the distance to the nearest neighbor for buildings in the central area of Węgorzewo between 1944 and 2019.

Variables	Year			
	1944	**1956**	**1989**	**2019**
Number of points	598	261	473	474
Observed mean distance (m)	16.0	22.6	20.75	19.98
Expected mean distance (m)	18.9	28.8	22.18	22.52
Average nearest neighbor index	0.84	0.79	0.94	0.89
Z-score	−7.20	−6.60	−2.69	−4.71

Source: own studies based on archival and present plans for Węgorzewo.

This is confirmed by changes in the average nearest neighbor indicator, although not in an obvious way. The ANN index shows the highest value for 1989 (0.94), followed by 2019 (0.89), which means the highest uniformity and regularity of building placement is occurring today. The lowest value was recorded for the period immediately after the war, in 1956 (0.79). The development was then the most loosened. It formed isolated structures resulting from the destruction of a significant amount of urban tissue.

The 'Z-score' index (the standard deviation of the distribution of points relative to the expected random distribution) indicates that the variation in the distance between buildings before the occurrence of war damage (1944) formed the most 'significant' arrangement (a value of −7.20). On the other hand, this arrangement was relatively the closest to a random distribution at the time of the economic and systemic transformation of 1989 (a value of −2.69, where the values $Z > -1.65$ and $Z < +1.65$ are interpreted as a random arrangement when using a 95 per cent confidence level). This is confirmed by the observation from Figure 5 of an exceptionally compact structure in the very center in 1944. However, within a radius of 300–500 m, the development is already significantly less concise. For the period 1989–2019, despite the spatial chaos and the obliteration of the original urban layouts, the overall greater regularity of building placement is revealed due to the layering of buildings from previous decades. The relatively lower rate for 2019 is surprising but may be due to the contemporary demolition of some facilities, especially utility buildings.

4.3. Changes in the Physiognomy and Spatial Layout of Węgorzewo

As a result of in situ urban landscape studies and a comparative analysis of archival and contemporary cartographic and iconographic materials, we identified the main spatial problems and manifestations of chaos in Węgorzewo on architectural, urban, and functional scales. In terms of morphology in the strict sense, i.e., spatial arrangement, numerous manifestations of chaotic urban space are distinguished. First of all, it is the loss of the original, historical character of the urban landscape by the obliteration of the pre-war spatial arrangement and the destruction of buildings (Figure 6). Only fragments of some streets, such as Jaracza, Pionierów, and Zamkowa, have preserved the former layout and development fragments. Additionally, the detachment of the development and the layout of plots and streets from the pre-war plan of the center is characteristic, as well as the lack of frontage in many streets and some squares of the central area, and the dispersion of development, especially on the outskirts of the town. The dispersion and chaotic location of buildings result from the destruction of the urban tissue and the dismemberment of the town due to the landform and the occurrence of wetlands, watercourses, and water bodies. Contemporarily, this state is also affected by suburbanization processes taking place on a small-town scale. In the case of the central area and surrounding zones, their characteristic feature is the presence of empty plots (free, undeveloped spaces) and accidental defects in development, resulting in a lack of harmony of the urban landscape and breaking the cohesion of the urban layout. This occurrence also breaks the cohesion of the central zone of sites with temporary development (e.g., garden plots).

Figure 6. Comparison of archival and contemporary views of the former Altmarkt and Holzmarkt and the present Grunwald Square, 1910–1915. Source: [105,106].

Spatial problems and chaos in building physiognomy were identified due to the completion of certain plots with infills that do not match the town's historical character and the introduction of facilities detached from the local construction tradition ineptly referring to it. Changes in the form and façade of some pre-war buildings, a complete mix of architectural styles (from the pre-war period, the modernism of the Polish People's Republic, the 1990s, and modern development) are also particularly noticeable, making it difficult to separate the historical center and surrounding development zones. New buildings, constructed after the war, are neither aesthetically nor stylishly adapted to the historical buildings, which translates into a peculiar urban landscape patchwork. In addition, the town contains buildings with shallow aesthetic values, both from the post-war period as well as modern infills; the use of low-quality materials and aesthetics to finish the façades of a significant number of buildings; a lack of uniformity of townscape elements in the central area; flashy advertisements in different locations of the town; a lack of unified graphic design and form of advertising spaces on facades of commercial and service buildings; and a lack of uniform colors on the multi-family building façades.

In the case of historic buildings (monuments) that survived the war, it is necessary to indicate their varying technical condition. Some buildings (tenement houses, water towers, and the historic rail bridge) are in a state that requires renovation/restoration/partial reconstruction. Moreover, there is a significant dispersion of historic buildings in the spatial layout of the town.

Functionally, the town's spatial chaos is manifested by the mix of various functions, enhancing the low clarity of spatial structures. It consists of the absence of strict boundaries between spatial forms and functional ones through the blending of residential and commercial zones and, to a lesser extent, industrial and transportation zones. It is worth

noting that despite the focus on tourism, in Węgorzewo there is no true center with services dedicated to tourists and locals. The dysfunction of the two main squares of the town (Freedom Square and Grunwald Square), due to the lack of a concentration of high-standard gastronomic objects and complementary infrastructure, hinders the further development of the tourist function of Węgorzewo.

Concerning the manifestations of spatial chaos in the town's specific areas, we paid special attention to Freedom Square, which is now the town's central square. In addition to not taking advantage of its functional potential, this space is characterized by surrounding buildings from different periods, a lack of continuity in development, and empty plots (Figure 7). Despite numerous redevelopment concepts [107–109], this square has not been fully redone and is still awaiting revitalization activities. The former town square, now Grunwald Square, was enclosed with multi-family blocks of flats and its spatial layout and the form of surrounding plots and buildings were completely changed. As a result, the function of a central public space was lost. The dysfunction is exacerbated by the fact that the largest and most representative building of the town, the Teutonic medieval castle, is no longer in any use. This property is currently in private hands. It was largely rebuilt during the last, but unfinished, renovation and fenced off with a corrugated fence (Figure 7). Adjacent on the one side to the Marina and on the other side to the main entrance street to the town (Zamkowa Street), it is a distinctive symbol of the spatial problems of Węgorzewo. Other manifestations of the spatial and functional chaos of the town include commercial and food buildings with low aesthetic values along Zamkowa Street, opposite the castle (Figure 7); degraded post-railway areas (the rail station and railway infrastructure, Figure 7); deteriorating production and storage buildings in the industrial district (Figure 7); the neglected park on Jaracza Street, adjacent to the railway station; the location of the supermarket opposite the historical building of the town hall; and the dispersal of public offices and institutions. The many parking lots along the town's main streets, especially Zamkowa, which turns into Armii Krajowej, constitute a separate issue. Parking infrastructure is valuable due to the functioning of individual transport in the town. Unfortunately, in aesthetic terms, the parking areas in their current locations reduce the urban landscape values by breaking down the continuity of the frontage and the compact nature of central development, as well as constituting a restriction to walking and cycling. It is also worth noting that the town is primarily located with its back to the waterfront (the Węgorzewo Canal). There are mainly green areas located directly at the waterfront and the Museum of Folk Culture. This area mainly serves a recreational function but lacks relevant tourist and paratourist infrastructure. According to the authors, the situation has recently been improved by the Marina's construction, but this area's potential remains largely undeveloped.

4.4. Spatial Chaos in the Context of Municipal Planning and Strategic Documents and According to Town Authorities

The authorities of Węgorzewo recognize the problem of spatial chaos occurring both in the town itself and in the municipality. This is evidenced by the Węgorzewo Municipality Local Development Plan (LDP) (from the year 2004) [80], still listed as valid, which contains observations on serious disturbances and deficiencies in the traditional spatial planning and physiognomy of the town, for example, due to contemporary, aesthetically and functionally unmatched (architectural- and urban-scale) building elements and the applied building materials. In addition, the implemented and suspended architectural projects disrupt the original layout and deepen spatial dissonances. The degradation of the space in the whole municipality of Węgorzewo also includes old residential establishments and historic cemeteries.

Figure 7. Examples of spatial chaos in Węgorzewo on an architectural and urban scale (status: September 2020). From left to right in the rows: (**A**). the lack of development on the northern side of Freedom Square (formerly Neuer Markt), (**B**). the castle and its fence from the side of Zamkowa Street, (**C**). 'temporary' commercial and food facilities at Zamkowa Street, (**D**). the building of the former Railway Station requiring revitalization, (**E**). the deteriorating infrastructure of the industrial district from the side of Jaracza Street, (**F**). chaotic service and municipal buildings from the Armii Krajowej Street side. Source: own photos.

The Study on Conditions and Directions of Spatial Development of the Municipality of Węgorzewo (from the year 2016) [81] also refers to spatial governance issues in its diagnostic part. It has been noted that new villages developed in three directions, following exit roads from the town, and they took on the character of suburban residential areas, where, due to investment pressure, the structure of development is changing (Ogonki, Kolonia Rybacka, Kal, and Trygort). This indicates the sprawl of Węgorzewo and, therefore,

the local suburbanization taking place. Concerning the town, three objectives have been particularly highlighted: the 'approximation' of the town to the shores of Lake Święcajty (the implementation of recreational, residential, and service functions), the transformation of Freedom Square (the informal urban market square) into the 'town's lounge', and the separation of a Special Economic Zone west of Przemysłowa Street (the north-west part of town). The document also highlights the dysfunctionality and the need to regenerate the Freedom Square.

The municipal study makes the search for land reserves for the development of various functions (single-family and multi-family housing, including services, public services, park greenery, business areas, transportation areas, and technical infrastructure) a priority. The study, following an account of land and an analysis of demographic absorbency (capacity), identified new development directions for housing of different intensities. Therefore, these areas require the creation of local zoning plans and action regarding technical infrastructure provision. From the point of view of town management, this is a priority, as it is about stopping the outflow of residents from the town (the implementation of the idea of a compact town).

Local plans should facilitate the spatial organization of the town and municipality. According to the 'Analysis of Changes in Spatial Development and Evaluation of the Validity of the Study and Local Plans of the Town and Municipality of Węgorzewo' (a municipal document adopted in 2017) [83], the coverage of urban space with the existing plans significantly improved over the past decade. During the period 2010–2014, planning documents were adopted in a large area of the town, with a division into urban units (East, Centre, and West), which supplemented the existing plan for Węgorzewo's south unit. The local plans included parts of the town most sensitive to the preservation of spatial order. In this way, more than 60% of the cover of the town area with local plans was reached, which is an average result for towns in the Warmian–Masurian Voivodeship. In total, there were 37 plans in force in the municipality in 2017, some of which were piecemeal changes to existing plans.

The abovementioned analysis of zoning changes revealed a large number of decisions issued on land development (administrative decisions granting permission to build in the absence of a local plan in the area concerned)—an average of 100 decisions per year, with volatility dependent on the economic situation in the construction and investment market. It is, therefore, appropriate to decide to maintain the spatial policy of successively drawing up local plans for high-investment areas. It is in these areas that the greatest threats to spatial order are to be expected. Unfortunately, land development decisions are not a tool effective enough to implement the intended, targeted spatial policy. This is caused by the fact that they are not required in the Polish system to comply with the Study on the Conditions and Directions of Spatial Development of a Municipality (as a strategic document in spatial policy). They are issued on the basis of the so-called 'good neighborhood' principle (the similarity of the form and function to adjacent buildings), which is often treated very flexibly. Additionally, it is possible to issue several such decisions for a single parcel. Local plans, on the other hand, make it possible to shape the spatial order in Polish towns in so far as they precisely indicate the permissible functions of land use, as well as existing and permissible building frontages and urban indicators (development intensity, building height, minimum biologically active area of the plot, and even aesthetic aspects of the development).

The areas selected in this 'Analysis of Changes' to be covered by local plans in the first place, when it comes to the urban area of Węgorzewo, were fragments of the surveying section 'Węgorzewo 2' (it covers the whole southern part of the town, reaching to the shores of Lake Święcajty). A review of the municipality's own acts [86] indicates that, since the beginning of 2018, 12 new local plans or changes to the existing plans have been adopted in the municipality (and works on changing several others have started). Noteworthy is the fact that among them is the local plan adopted in 2019 for the Węgorzewo-Centre area, as well as changes to the plans for the areas of Węgorzewo-West and Węgorzewo-Lake

Święcajty. This shows that the planning policy previously indicated by the municipality is being implemented, at least in terms of the inclusion of further areas of the town in the local spatial development plans.

In the context of spatial chaos in the town, particular attention should be paid to the diagnoses in the Local Regeneration Programme of the Town of Węgorzewo for the Period 2017–2020 (LRP). The regeneration program, following the delimitation of degraded areas, identified two main areas of concentration of revitalization processes: the central part of the town (sub-area A) and the railway station complex on Stefana Jaracza Street (sub-area B). The regeneration area in Węgorzewo covers 5.18% of the town (56.36 hectares) and is inhabited by 26.33% of its population (3022 people according to 2017 data).

According to the abovementioned document's authors, the poor quality of public spaces is evident in several areas. One of them is a complex of the railway station facilities, which have been entered into the register of historical monuments, and a park located in its vicinity, on Jaracza Street. The technical condition of the facilities located there is described as bad. They require maintenance and renovation, while the park needs to be thoroughly restored and the accompanying infrastructure needs to be modernized. The accessibility of these places and their location are advantages increasing the tourist attractiveness of this part of the town. The first step towards improving the state is to open a tourist information center at the railway station. The restoration of a railway connection to the nearby town of Kętrzyn is also being considered (information from an interview with the mayor, 23.09.2020).

Public spaces of low quality are also present in the town's center area, including Freedom Square. Given the relatively large area of the square, its development is considered to be poor—a large part of the square is an asphalt plane that does not induce any activity and allows only for quick passing. This area of the square is complemented by relatively unattractive facilities—a bandshell with several rows of wooden seats, benches, and a fountain, surrounded by a strip of low vegetation.

The Local Regeneration Programme also identified places where other problems related to public space in the town are apparent. Undoubtedly, these include the effects of vandalism: illegal, offensive inscriptions, drawings, and paintings on multi-family residential buildings, public buildings, and brick fences. Attention was also drawn to the technical degradation of some local roads and the lack of street lighting. In different areas of the town, the problem lies in buildings' technical and aesthetic condition and their surroundings. This also applies to buildings that have been entered into the register of historic monuments or the municipal register of monuments, or those located within the urban conservation area's boundaries, which cover the town's fragmentary urban layout that prevailed historically.

The town's regeneration is strongly oriented towards the social sphere, as evidenced by a detailed diagnosis, which ends with a study and a spatial presentation of a synthetic index of social degradation and a similar economic phenomenon index. Projects related to the renovation of historic buildings, the modernization of transport infrastructure, the improvement of buildings' energy efficiency, and the restoration and development of green areas were also included. The value of the regeneration projects provided for in the Local Regeneration Programme is 56.95 million PLN (Polish zlotys) (12.35 million euro), which represented nearly 70% of the town's annual budget in 2020. It is worth noting that a more extended implementation period was adopted for the regeneration and development of Freedom Square, going beyond the timeline provided in the LRP.

An interview with the mayor and the deputy mayor of the town (conducted on 23 September 2020) indicates that Węgorzewo is a town that was strongly affected by the war, while the period of the Polish People's Republic—despite the reconstruction efforts—was a time of many wrong decisions. Flawed planning decisions were also made after the political transition of 1989, including the sale and long-term lease of plots of land in the town's most prestigious locations, which have now resulted in local authorities having little room to maneuver to improve the physiognomy and functioning of the town. A

notable example of a controversial decision is the Teutonic castle's sale, together with the adjacent parking lot, to a private investor (in 2000), which was not followed by proper restoration and adaptation works. As a result, the most significant historic building on the main entrance road to the town, with access to the waterfront and walking areas in the vicinity, is deteriorating and inaccessible to tourists and residents. Thus, it represents an anti-landmark and anti-advertisement of the town.

The town authorities, aware of the spatial problems arising from the post-war history of the town, and the limited ineffectiveness of the applied solutions, such as the introduction of Local Regeneration Programs, are now using the method of small steps to improve the quality of the space, and they have achieved some success. The reconstruction and development of the eastern part of Freedom Square, adjacent to Zamkowa Street, has proceeded. Current works are aimed at sorting out the eastern frontage and enclosing it visually. There are also plans and ideas for partial frontage alignment for other parts of the square and some modernist buildings' reconstruction to refer to pre-war buildings. The town is mainly dependent on the development of various forms of tourism. Therefore, the tourist and recreational infrastructure should be improved and the public spaces' cleanliness and aesthetics maintained.

5. Discussion

Urban chaos occurs on virtually all scales considered by urban geography, from the level of a single parcel, block [18], town, city, or agglomeration [19,20], through the regional, national, and international scales [21–23], to a global depiction [24]. As a phenomenon with a complex genesis and multifaceted effects, the problem of spatial chaos is discussed in the literature from the point of view of many research perspectives [63]. The debate on this issue is particularly lively in countries with long-term and severe socio-economic problems, where spatial planning and space quality issues must give way to more ad hoc needs [110,111]. This phenomenon also occurs in the most developed countries of the world, especially in cities experiencing an economic crisis and strong depopulation, e.g., due to the decline of a functional monoculture and unfavorable social processes. In both affluent and nonaffluent societies, spatial chaos is often equated with urban sprawl's adverse effects [112,113]. The manifestations of spatial chaos in cities' central parts and in their suburbs, where aesthetic (architectural–urban) and functional dysfunctions of public spaces are particularly visible, have a different genesis [12]. Spatial chaos occurs in areas of many shrinking cities. The central zones of these cities face socio-economic, urban planning, and infrastructural problems [114–117].

Using the example of the urban development of Poland, it has been proven that spatial chaos, regardless of its origins and conditions, is difficult to stop and reverse. It also generates high economic, spatial, aesthetic, and social costs [5,63]. The emergence of spatial chaos can be evolutionary, and created over time, for example due to poor-quality laws or the lack of their proper enforcement [118]. Spatial chaos can occur suddenly due to violent and destructive natural phenomena, such as earthquakes and accompanying tsunamis [119,120], floods, or hurricanes [121]. More often, however, it is the result of phenomena such as a severe economic and social crisis or an armed conflict [122,123]. Typically, the longer the war period, the greater the damage. One of the most tragic events in the history of humanity was WWII. Its effects in many European cities and towns, including Węgorzewo, and as described in this article, are still suffered today. War destruction also affected cities and towns in the 1980s, 1990s, and 2000s and continues today. Examples include the destruction of the urban tissue in Beirut [124], Mostar [125], and Aleppo and Homs [126,127].

An analysis of the war destruction and reconstruction problems in Węgorzewo is part of the extensive literature on the post-war spatial transformation of the cities and towns in Poland [128], and in the broader context also of the cities and towns of Central and Eastern Europe [129,130] and Western Europe [131]. Based on the proposed typology of the destruction of European cities [9], among the cities of Central and Eastern Europe, on

the two opposite poles one may situate the capital of Czechia (Prague) and Kraków, which were practically not destroyed (*the orthomorphic type*), and the wholly ruined current capital of the Kaliningrad Region (Kaliningrad or Königsberg) (*the metamorphic type*). This group also includes Budapest in Hungary, Hamburg, Dresden, and Cologne in Germany [132], Hall, Portsmouth, and Coventry in the United Kingdom, and Volgograd (Stalingrad) in Russia. The intermediate type of Central European city, where 50–70% of the tissue was destroyed (*semimorphic*), is represented by Wrocław, Poznań, and Essen.

Węgorzewo, as discussed in the article, can be classified as a *metamorphic type* with an enormous scale of destruction. Such a significant degree of destruction of the town and the way it was rebuilt after the war determined the appearance of spatial chaos in its area. It covers the historic center of the town and involves a lack of reconstruction of the pre-war tissue replaced by new development from the socialist period. This development contrasts strongly with the few surviving pre-war buildings. Its layout and physiognomy contribute to aesthetic, spatial, and functional problems that were described using examples of cities and towns of Central and Eastern Europe. The post-war spatial chaos of Węgorzewo is not unique in Poland. It concerns both large cities, such as Szczecin, Gdańsk, and Elbląg, as well as small towns, also in the Masurian Lake District, such as Kisielice, Biskupiec, and Gołdap [50,107]. In a broader context, the spatial problems observed in Węgorzewo are noticeable in many other cities affected by major war damage.

The nature and directions of reconstruction of the most valuable fragments of destroyed cities and towns in Poland, such as old-town complexes, clearly evolved in the post-war period [133]. In the first stage, the process of more or less accurate reproduction of the historical form and function of urban development (e.g., Warsaw, Wrocław, and Olsztyn) prevailed. In the following period, the old forms and functions of development were distorted and attempts to harmonize the new and old architecture were rarely successful. In the following years, the recreation of old architectural and urban forms and the destroyed areas' original functions was completely abandoned. The old development was replaced by modernist buildings constructed using prefabricated concrete slabs, which led to a loss of the identity and cultural context of the central areas of many urban centers (Malbork, Kołobrzeg). In the next stage, initiated in the 1980s, attempts were made to combine tradition with modernity, using the retroversion method, consisting in restoring the location and size of the buildings as accurately as possible while using modern forms and materials and restoring old functions (the Old Town in Elbląg, Podzamcze in Szczecin, Granary Island in Gdańsk, Malbork) [50,57,134]. Such projects have also been initiated in the Russian part of former East Prussia, for example in Baltijsk [135].

This process occurred differently in Germany. In the initial period, attempts were made to rebuild cities in a modern spirit. Only over time was a method adopted that aimed at the restoration of the original architectural and urban assumptions [136]. Currently, the trend of historical reconstruction is popular in Poland. In the Warmia and Masuria region, there are many examples of the accurate reconstruction of selected buildings destroyed during WWII. Towns where such investments have been accomplished include Giżycko, Ostróda, and Pisz. These trends have also reached the Kaliningrad Region, where, for several years, at least a partial reconstruction of the old town area of former Königsberg, and the demolition of the modernist Soviet House, which was built on the rubble of the former castle, have been considered.

It is worth noting that, paradoxically, there is a better chance of reconstruction in the historical spirit, and at least a partial return to the pre-war form of the centers of cities and towns whose fragments have not yet been rebuilt after war destruction. In the first place, such investments are carried out in large cities. Small and tiny towns, with a peripheral location, little economic power, and poor promotion, such as Kisielice and Miłomłyn in northern Poland, are still waiting for the reconstruction and the renaissance of their centers.

In the urban landscape of Węgorzewo and many other towns that suffered during the war and underwent an intense spatial transformation during the period of the Polish People's Republic with further establishments in later years, vast and seemingly irreversible

changes took place. Architecture must always be considered in a particular context as an essential decisive component of spatial chaos [39,43]. Since an architectural structure functions in a particular environment, it is sporadic to fit stylistically new buildings into existing development. Breaking with the previously planned form of the town, preserved in the form of a regular division of plots, the course of streets and buildings' location introduce significant spatial dissonance and devastation of the urban landscape. Consequently, we can presently distinguish several elements that introduce spatial disorder and negatively affect the perception of many Polish cities and towns [33,50].

In this context, it is worth considering how other devastated European cities have coped with post-war reconstruction and whether this process has contributed to the existence of spatial and physiognomic chaos in their area. Among the most damaged European cities are Polish cities (Warsaw, Poznan, Wieluń), including those located in Germany before and during WWII (Wrocław, Szczecin, Kołobrzeg) or having a special status (Gdańsk), followed by German cities (Berlin, Dresden, Hamburg), British cities (London, Coventry, Manchester, Birmingham, Hull), and Dutch Rotterdam [44,137]. In the United Kingdom, war destruction has been used in urban redevelopment plans to eliminate unnecessary building relics and create opportunities for the development of 'cities of the future'. The needs of development caused a situation where, until the 1960s and 1970s, the urban landscape had been shaped by modernist buildings (including the extensive use of prefabricated materials), the strict zoning of civic and commercial zones, new road layouts, and comprehensive road arteries separating cars and pedestrians [138,139]. This philosophy of reconstruction also referred to other Western European cities, such as Rotterdam and Hamburg. In Berlin's case, the city's post-war division and the urban–political rivalry between the Allies and the Soviet Union increased its internal architectural and functional diversity [140,141]. It can be argued that, due to the importance of Berlin (a global city) and the size of reconstruction, spatial chaos does not pose a problem, and in the dichotomy of the morphological diversity of the city lies its uniqueness and strength. This became particularly apparent after the collapse of the Berlin Wall and in the subsequently unified city.

In this regard, the specificity, scale, and nature of the spatial chaos in Węgorzewo are difficult to compare with other towns and especially with large cities. The 'wave' course of destruction, restoration, and reconstruction processes resulted in many European cities and towns today being a mixture of urban layouts and architectural styles. Węgorzewo is a perfect example of the above. Unfortunately, combining the old tissue's remains with the town's reconstruction in a modernist spirit, in addition to the undoubted benefits of ensuring its inhabitants' living conditions, did not result in positive changes, especially in terms of the landscape, physiognomy, and spatial arrangement, or in the scope of the protection of cultural heritage.

Due to the large scale of the destruction followed by the rapid development of the urban areas of Węgorzewo, the chaoticness of the urban composition is one of the main problems of the town. Disturbances of spatial order in Węgorzewo are also, to some extent, caused by the implementation of infills, which added to both the pre-war and post-war tissue. In addition to the composition and layout of building complexes, additional criteria affecting the quality of urban space are the technical conditions and preservation level of the existing tissue and the quality of public space In Węgorzewo, in this regard, the situation is satisfactory [81,84].

It is worth focusing on the social perception of spatial changes in Polish cities and towns that took place during the period of the Polish People's Republic and over the last 30 years. In this context, the conclusions of a qualitative study (semi-structured individual interviews) among residents of six historical towns in Masuria may be of interest [142,143]. This study looked at the morphological transformation of cities and towns until 1989 and the perception of changes from the post-socialist transition period to the present day. One of the studied towns was Węgorzewo. Its inhabitants, respondents who, in the vast majority, were over the age of 50, rated low the post-war process of rebuilding the town, indicating

an excellent nostalgia for pre-war buildings. It was pointed out that the post-war period was characterized by deficiencies in infrastructure and material shortages, exacerbated by the export of building materials for the reconstruction of other cities and towns, including Warsaw [144]. The period of socialism was assessed as a time of missed opportunities for the organization of buildings and the town's development, despite some positive aspects, such as establishing factories and the dynamic development of housing construction. Most people pointed out that the town's best years were after Poland joined the European Union in 2004. When it came to assessing the directions of the town's spatial development after 1989, respondents were often critical, in addition to a generally good assessment related to functional development, cleanliness, care for urban greenery, and better transportation accessibility. This was due to the strongly perceived phenomenon of spatial chaos and the process of urban sprawl.

Despite the many internal problems of the town, mainly due to historical conditions and processes and its geographical location, Węgorzewo is trying to counteract the crisis in spatial, social, and economic terms. In Węgorzewo, local regeneration programs aimed at organizing the space and improving the cleanliness of urban spaces and the aesthetics of public spaces, especially green spaces, have been implemented since 2009 [82]. The quality of public spaces is being improved, the urban tissue has been infilled, new municipal and county offices have been built, and new single and multi-family housing estates are being built. New ways of economic development are also being sought, e.g., through investment in tourism infrastructure. The town has secured all the infrastructure necessary for its operation.

6. Conclusions

As this geographical and historical study of Węgorzewo, and in particular its very center, has shown, the town may be exemplary of the spatial problems of many war-ravaged towns in Poland. After being cleared of rubble in the 1960s, a new apartment block housing estate was built in the former tenement development area. This area, technically, offers a good quality of life. The estate on the former old town site is now well connected with the rest of the town, offering residents access to space, adequate sunshine and airing, green areas, and parking spaces. There is infrastructure, such as shops with essentials, and the residential development is renovated and well maintained. The problem, however, is the location of this estate, which has replaced the most central and representative part of the town. Through its construction, the multi-century context of the place and its surroundings was broken. The destruction and shape of the post-war reconstruction have radically changed the original spatial and functional layout of Węgorzewo, depriving the town of a central public space. In this way, a break in the continuity of the settlement was created, which was further contributed to by the local population's total exchange. It is now a historical and socio-spatial paradox. The seemingly well-maintained apartment block estate, despite having the shortcomings characteristic of modernist buildings [145,146], does not indicate spatial chaos. However, let us consider the historical context and the morphology and physiognomy of the neighboring development zones, which have also undergone a complete transformation. This area reveals the spatial and functional inability and the randomness of the location of the new development. In combination with the town's other problems, as described in the Results section, the concept of spatial chaos in Węgorzewo takes on a complete expression.

Additionally, from the analysis of municipal strategic and planning documents, as well as expert interviews with town authorities, a picture of Węgorzewo as a town struggling with multifaceted problems of spatial governance is drawn. Among the main problems are the lack of a clearly separated center, the poor quality of public spaces in the central part of the town, unesthetic development and functional chaos, and even the degradation of historic buildings (the example of the Teutonic castle and the post-railway facilities). On the other hand, the problem lies in the spatial expansion of urbanization on the town's outskirts.

The article's research objectives have been reached by applying different research methods and a multifaceted view of the town's spatial problems. It was empirically proven that the spatial chaos in Węgorzewo derives from World War II's destruction and the nature of the socialist reconstruction and transformation of the town's development after 1989. Spatial chaos is noticeable primarily in morphological (spatial) and architectural (physiognomic) terms.

Spatial chaos in these two aspects continues to pose many threats to the formation of spatial order in the town. The particularly adverse aspects include:

- the lack of an up-to-date historical and urban planning study and comprehensive conservation and urban planning recommendations;
- the lack of a uniform, comprehensive concept of reconstruction, regeneration, and restoration of the built-up area in the central part of the town;
- the lack of effectiveness in the implementation of the local regeneration programs;
- the lack of a regulated ownership state for many objects and sites in the central area, which makes it challenging to undertake large-scale investments;
- the sale of flagship, attractive, and ideally located plots and buildings in the town (the castle and the area across from Zamkowa Street) to private owners;
- the lack of regeneration of the castle and the lack of ideas for solving the situation;
- ideas for introducing new architecture without respect for the local construction tradition;
- socio-economic problems related to the attempt to restore the Węgorzewo–Kętrzyn railway connection;
- the lack of a specific plan and strategy for the legal protection of the urban layout of the town, which has been entered into the register of historical monuments (it is not known what to protect or how);
- failed attempts and the lack of a vision acceptable to residents regarding the regeneration of the central public space in Freedom Square; and
- the conservative mentality of some residents accustomed to the current state of architecture and urban planning.

Other problems affecting the functioning and the landscape of the town include: incomplete use of the full potential of the Węgorzewo waterfront; the failure to adapt the infrastructure to the needs of the modern reception of tourists; the lack of sufficient accommodation and catering facilities; the seasonality of tourist traffic; the lack of adequate spatial information for visitors; the lack of funds for large-scale investments; and the disproportionately large scale of spatial problems in relation to the size of the town and its economic base.

The answer to these problems is to renew central urban squares, strengthen the role of the waterway running through the town and the role of the characteristic waterfront of Węgorzewo, regenerate degraded areas, introduce infills (including valuable implementations in the historical spirit), organize infrastructure, transportation lines, and green areas, care for the façades of buildings and townscape elements, and prepare local zoning plans according to the problems of particular areas.

Struggling with the past's complicated legacy, Węgorzewo is looking for new ways to secure its existence and development. It focuses on developing tourist functions, taking care of the aesthetics of public spaces, and investing in infrastructure and promotion. In addition to seeking external investment, town authorities should also pay attention to the issues of the identity of residents and their attachment to the site and the attempt to attract tourist traffic on a larger scale and extend tourist stays. For this purpose, even a partial restoration of the town's cultural heritage, its cultural landscape, and its historic character may be worth considering. In addition to active tourism, the town could develop its attractiveness more dynamically based on its cultural values while strengthening local patriotism among the inhabitants.

According to the authors of the article, Węgorzewo, after more than thirty years of functioning within a market economy and several years of using funds from and development patterns within the European Union, is now on the threshold of a new

stage of development. The town is making active attempts to counteract the spatial and physiognomic chaos. The implemented actions considerably mitigate the negative reception of aesthetics and promote the harmony of urban space. However, 76 years after WWII, Węgorzewo is still searching for its spatial, landscape, and cultural identity. This is not an easy task since, according to Nagel [124], 'the built environment is significant not only for what it says but for what it neglects to say about the past and the present.'

This article contributes to the studies of urban spatial structures affected by war damage and related problems. The presentation of the genesis of the contemporary spatial situation in the studied town against a broader background of comparisons at the scale of Poland, the CEE region, and other European and non-European countries is an important contribution to the study of spatial chaos in urban geography. We focused on a comprehensive analysis of the effects of spatial transformations caused by the wartime destruction, the communist period, and the period of socio-economic transition. Much of the contemporary literature on spatial chaos focuses on the effects and contemporary manifestations of spatial chaos. We went a step further in our analysis, trying to indicate the effect-causing character of the described processes. The research period studied in this article was quite long and covered nearly 80 years of the 20th and 21st century. The historical perspective adopted in this article does not extinguish the discussion on the direction in which the "spatial chaos" of urban space will progress in the future, and what tools can be used to prevent and counteract it.

The research problem raised in this article is complex and should be considered from the point of view of different research disciplines. The results presented in this article, based mainly on a geographical–historical approach using morphological and physiognomic research methodologies, have a sectoral character. They focus on the emergence of spatial chaos and its contemporary manifestations in the layout and landscape of Węgorzewo. The functional, social, legal, and cultural issues relating to spatial chaos and issues of regeneration and restoration of the town's space have only been outlined. They certainly require further comparative research and case studies on interdisciplinary grounds and a larger spatial scale. As shown in this article, urban problems caused by WWII damage are still experienced. They are not limited to Polish cities and towns or the Central and Eastern European region; they cover a much larger area. It is said that the history of the world is the history of wars, and there is no indication that the reflection on the effects of military action has lost its importance at present.

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